

## **REMARKS**

In the present amendment, claims 3, 6, 7, 9, 10 and 13 have been amended, claims 1, 8, 11, 12, 16 and 17 have been cancelled and new claim 18 has been added. Accordingly, claims 3, 6, 7, 9, 10, 13, 14, 15 and 18 are pending in the application with claim 13 being independent.

Applicants note that claim 13 has been amended by substantially adding the features of now canceled claim 1, 8, 12, and 16.

Furthermore, claim 3 has been amended to recite the trivalent metal ion as being  $\text{Fe}^{3+}$ . Support for the amendment can be found throughout the originally filed specification, e.g., at page 3, first paragraph.

Moreover, claims 3, 6, 7, 9 and 10 have been amended as method claims which depend from independent claim 13.

New dependent claim 18 specifies that the  $\text{Fe}^{3+}$  containing solution of claim 13 is  $\text{FeCl}_3$ . Support for new claim 13 can be found, e.g., in Example 1, page 19, last paragraph, of the present specification.

No new matter has been added.

### **Restriction Requirement**

Applicants note with appreciation that the Restriction Requirement has been withdrawn.

### **Rejections under 35 U.S.C. § 112, first paragraph**

The Office Action rejects claim 17 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement.

Applicants note that in order to enhance prosecution of the present application and without expressing agreement with or acquiescence to the rejection, claim 17 has been cancelled which renders the rejection of that claim moot.

### **Rejection under 35 U.S.C. § 102/103**

The Office Action rejects claims 1, 3, 6, and 7 under 35 U.S.C. § 102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly being obvious over JP10118167 to Atsumi, hereinafter “ATSUMI.”

Applicants submit that in order to enhance prosecution of the present application and without expressing agreement with or acquiescence to the rejection, claims 3, 6, and 7 have been amended and claim 1 has been cancelled. Applicants note that amended claims 3, 6, and 7 are now dependent from claim 13. Since claim 13 has not been rejected over ATSUMI, withdrawal of the rejections over ATSUMI is respectfully requested.

Furthermore, the Office Action makes the following claim rejections under 35 U.S.C. § 103(a):

- claims 8-16 as allegedly being obvious over ATSUMI in view of US 5,651,884 to Ichitsuka et al., hereinafter “ICHITSUKA;”
- claim 13 as allegedly being obvious over ICHITSUKA; and
- claims 13-17 as allegedly being obvious over ATSUMI in view of Lennart et al.

(Analytical Biochemistry 154, pp. 250-254), hereinafter “LENNART.”

As noted above, in order to enhance prosecution of the present application and without expressing agreement with or acquiescence to the rejection, claims 3, 6, 7, 9, 10 and 13 have been amended, and claims 1, 8, 11, 12, 16 and 17 have been cancelled.

Applicants point out that according to the present invention, by the step of passing the solution containing  $\text{Fe}^{3+}$  through the adsorbent filling space of the column at the claimed rate of 0.1 to 10 ml/min, the  $\text{Fe}^{3+}$  can be sufficiently bonded to the surface of each of the apatite particles. Especially in the case where the average particle size of the adsorbent is in the claimed range, each of the apatite particles in the column can have a sufficiently large surface area. This makes it possible to effectively bond the  $\text{Fe}^{3+}$  to the surface of each of the apatite particles in the step of passing the solution containing the  $\text{Fe}^{3+}$  through the adsorbent filling space of the column. As a result, the adsorption apparatus containing the adsorbent finally obtained in the column can selectively adsorb a phosphorylated protein from various proteins. Namely, the feature of the present invention resides in the specific combination of the claimed flow rate and the claimed particle size of the adsorbent.

In contrast to the presently claimed invention, ATSUMI discloses that a slurry of an apatite is added to a solution containing  $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$  as a metallic salt to thereby obtain an adsorbent comprising the apatite with  $\text{Fe}^{3+}$  (see ATSUMI, paragraphs [0055] and [0056]). However, ATSUMI does not disclose or suggest an average particle size of the adsorbent finally obtained. Further, ATSUMI also does not disclose or suggest a step of passing a solution containing  $\text{Fe}^{3+}$  through an adsorbent filling space filled with the apatite at a flow rate of 0.1 to 10 ml/min as employed by the presently claimed invention.

Applicants further point out that ICHITSUKA discloses a column packing material (adsorbent) useful in liquid chromatography. Furthermore, ICHITSUKA discloses that the column packing material is made of an apatite such as  $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ ,  $\text{Ca}_3(\text{PO}_4)_2$ ,  $\text{Ca}_{10}\text{P}_2\text{O}_7$ ,

$\text{Ca}(\text{PO}_3)_2$ ,  $\text{Ca}_{10}(\text{PO}_4)_6\text{F}_2$  or  $\text{Ca}_{10}(\text{PO}_4)_6\text{Cl}_2$  (see ICHITSUKA, column 7, lines 33 to 36) and has an average particle diameter of about 2 to 100  $\mu\text{m}$  (see ICHITSUKA, column 9, lines 26 to 27). However, the column packing material of ICHITSUKA does not have  $\text{Fe}^{3+}$  as a component thereof. Therefore, ICHITSUKA does not disclose or suggest that the column packing material is made by a step of passing a solution containing  $\text{Fe}^{3+}$  through an adsorbent filling space filled with the apatite at a flow rate of 0.1 to 10 ml/min as employed by the presently claimed invention.

In view of above presented arguments, the combination of ATSUMI and ICHITSUKA does not lead to the presently claimed invention, nor would it have suggested to a person of ordinary skilled in the art to derive the presently claimed invention. Accordingly, withdrawal of the rejection of claims 8-16 over ATSUMI in view of ICHITSUKA is respectfully requested.

Concerning the rejection of claim 13 over ICHITSUKA, Applicants respectfully request withdrawal of this rejection as well in view of the amendments to claim 13 and above presented arguments with respect to ICHITSUKA.

With respect to the rejection of claims 13-17 over ATSUMI in view of LENNART, Applicants note that LENNART discloses a packing material (adsorbent) for a chromatography comprising IDA-Sepharose gel having capacity for binding with  $\text{Fe}^{3+}$ . Further, LENNART discloses that ferric chloride solution is applied to the IDA-Sepharose gel until the metal (iron) appeared in the eluate to thereby obtain the packing material (see LENNART, page 250, right column, lines 8 to 12). Applicants point out, however, that the packing material in LENNART does not comprise an apatite as employed by the presently claimed invention, but comprises the IDA-Sepharose gel. Further, LENNART does not disclose and suggest an average particle size

of the adsorbent finally obtained. Moreover, also LENNART does not disclose or suggest a step of passing a solution containing Fe<sup>3+</sup> through an adsorbent filling space filled with the apatite at a flow rate of 0.1 to 10 ml/min as employed by the presently claimed invention.

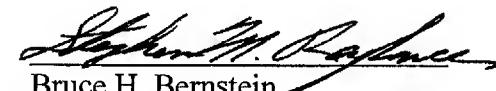
In view of the foregoing, also the combination of ATSUMI and LENNART does not lead or would have suggested the presently claimed invention. Accordingly, withdrawal of the rejection of claims 13-16 over ATSUMI in view of LENNART is respectfully requested as well.

### CONCLUSION

In view of the foregoing amendments and remarks, the Examiner is respectfully requested to reconsider and withdraw the rejections of record, and allow each of the pending claims.

If any issues yet remain which can be resolved by telephone, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,  
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